own observations telescopic meteors exceed the more conspicuous class of these bodies in the proportion of about 40 to 1. Rich showers probably exist only visible with instrumental means, and certain showers readily perceptible to the naked eye afford little indication of their existence with telescopic aid. The Geminids may be ranked among the latter, for on December 12, 1877, Lewis Swift at Rochester, whilst comet seeking during a period of 4½ hours, noticed a large number of naked eye meteors. They frequently intruded upon his attention in the intervals when his eye was withdrawn from the telescope, and his estimate of the number visible was 1000 for the whole period of his observations. Yet, singularly enough, there was an unusual paucity of telescopic meteors, only two certainly, and one other suspected, crossing the field of view of 1½°, whereas they are usually of frequent occurrence.

The observation of meteors, both telescopic and otherwise, especially commends itself to amateurs as an attractive study, requiring no elaborate or expensive instruments. The inconveniences attending such work may soon in great measure be overcome by patience. In cases where the results are thoroughly reliable we think that even slender observations possess weight and ought to be encouraged, for such results soon accumulate, and if allowed to extend over several years may be combined and reduced to very satisfactory issues. Or the materials obtained by different observers for similar epochs might be collected and the radiant points determined from a careful analysis of the path-directions. In every instance, however, the physical appearances of the meteors ought to be fully described and given due weight in fixing the radiants. Without these precautions it is impossible to obtain reliable positions or to arrange the meteors into family groups with anything like that precision which is an essential feature of the work.

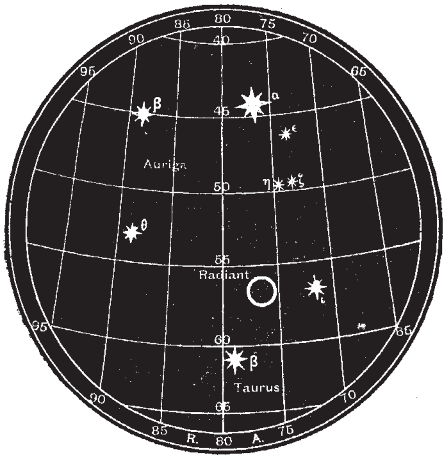

Fig. 2.

It is earnestly hoped that more enthusiasm may now be aroused amongst observers in this interesting department of astronomy. The question as to the duration of radiants and their absolutely fixed position must have an important bearing on the theory of their origin, and deserves much further investigation. The apparently intermittent character of many such streams also deserves notice, as their fluctuations may be regulated by definite periods of short duration. The observations of individual radiants should be confined to a few nights only, or when, from the paucity of meteors, it is found necessary to include results extending over several weeks, the nights of greatest intensity should be mentioned. The necessity exists for equal accuracy in deducing the radiant points, as in registering the exact directions of flight; in fact, great discrimination and precision are required in details so mutually dependent, so liable to errors, and so full of complications.

One of the most active and at the same time one of the most precise and well-defined cases of long duration is exhibited by a meteor shower in the southern extremity of Auriga and slightly to the north-east of a line connecting the stars ι Aurigæ and β Tauri. It gives the first sign of its existence at the end of July, and thence continues during several ensuing months. The epochs about October 8–15 and November 7 and 20 would appear to represent the most prominent exhibition of this radiant, though there are many other nights during the summer and autumnal months when it may be detected during a prolonged watch. The accompanying diagram (Fig. 1) shows the projected paths of eighty meteors (chiefly observed by myself at Bristol, and selected as being tolerably near the radiant point) recorded during the months of October and November. These paths form only a proportion of the aggregate number seen, but they sufficiently display the singularly precise radiation of this stream. A similar diagram might readily be prepared from the flights recorded in August and September when the convergence of an almost equal number of meteors attest the visibility of the same radiant. Its position relatively to the stars is given in Fig. 2, and it is hoped that observers will endeavour to effect its re-observation. We require further observations particularly during the month of August, when the radiant is very low, until the morning hours, and this doubtless accounts for the rareness of its apparition at that epoch. W. F. DENNING

NOTES

THOSE who are interested in the South Kensington Museum will be glad to learn that the National Collections belonging to the Science Department have now a prospect of improvement. A Government Committee has lately been appointed to report generally upon them and to consider plans for properly housing them. The Committee consists of gentlemen of high position in various Government Departments; the Chairman is Sir Frederick Bramwell, F.R.S., and Dr. W. Pole, F.R.S., is the Secretary.

THE Prince of Wales, President of the International Inventions Exhibition, has fixed Monday, May 4, for the opening of the Exhibition. Rapid progress is being made in all branches connected with the Exhibition. The large space set apart for machinery in motion is already being filled, whilst preparations for receiving other exhibits are well forward, some of which have arrived at the building. The Aquarium Department is receiving considerable attention, and will form a very attractive feature. The tanks have been thoroughly cleansed and refilled with fresh water, which has been softened and filtered, rendering it bright and pure, fit for the reception of large consignments of fish that will shortly arrive. Lord Onslow has lately presented 1500 exceedingly fine carp to the Aquarium, and a large number of fish indigenous to the Canadian Lakes have also been received for exhibition in the tanks.

THE Royal Society of New South Wales offers its medal and a money prize for the best communication (provided it be of sufficient merit) containing the results of original research or observation upon each of the following subjects:—Series IV. To be sent in not later than May 1, 1885:—No. 13. Anatomy and life-history of the Echidna and Platypus; the Society's Medal and 25*l.* 14. Anatomy and life-history of Mollusca peculiar to Australia; the Society's Medal and 25*l.* 15. The chemical composition of the products from the so-called Kerosene Shale of New South Wales; the Society's Medal and 25*l.* Series V. To be sent in not later than May 1, 1886:—No. 16. On the chemistry of the Australian gums and resins; the

Society's Medal and 25*l.* 17. On the tin deposits of New South Wales; the Society's Medal and 25*l.* 18. On the iron-ore deposits of New South Wales; the Society's Medal and 25*l.* 19. List of the marine fauna of Port Jackson, with descriptive notes—as to habits, distribution, &c.; the Society's Medal and 25*l.* Series VI. To be sent in not later than May 1, 1887:—No. 20. On the silver-ore deposits of New South Wales; the Society's Medal and 25*l.* 21. Origin and mode of occurrence of gold-bearing veins and of the associated minerals; the Society's Medal and 25*l.* 22. Influence of the Australian climate in producing modifications of diseases; the Society's Medal and 25*l.* 23. On the Infusoria peculiar to Australia; the Society's Medal and 25*l.* The competition is in no way confined to members of the Society nor to residents in Australia, but is open to all without any restriction whatever, excepting that a prize will not be awarded to a member of the Council for the time being; neither will an award be made for a mere compilation, however meritorious in its way—the communication, to be successful, must be either wholly or in part the result of original observation or research on the part of the contributor. The successful papers will be published in the Society's annual volume. Fifty reprint copies will be furnished to the author free of expense. Competitors are requested to write upon foolscap paper, on one side only. A motto must be used instead of the writer's name, and each paper must be accompanied by a sealed envelope bearing the motto outside and containing the writer's name and address inside. All communications to be addressed to the honorary secretaries, A. Liversidge and A. Leibius.

A LECTURE on "Cholera, what it is, and how it may be guarded against," will be given by Prof. Burdon-Sanderson at Toynbee Hall, 28, Commercial Street, E., on Thursday, March 26, at 8.15 p.m.

A MEETING of scientific men was held on Saturday at the University College, Liverpool, at which it was resolved to prepare a scheme for investigating the marine fauna of the neighbouring seas, so that a commencement of the work might be made during the ensuing summer. Prof. Herdman had the organising and details entrusted to him.

THE Duke of Westminster and the Committee of the Sunday Society have issued invitations to a National Conference with authorities and officers of museums, art galleries, and libraries which have been open in the United Kingdom on Sundays. The Conference has been called specially for the purpose of directing the attention of Parliament to the results which have attended the Sunday opening of museums, art galleries, and libraries in the United Kingdom, and it is expected that representatives will be present from each of these institutions. The Conference will assemble at St. James's Hall, on Wednesday, March 25, at half past two, and the proceedings will commence at three o'clock precisely.

AT the meeting of the Society of Arts on Wednesday, the 25th inst., Mr. A. J. Ellis will read a paper on the "Musical Scales of Various Nations." The paper will be illustrated by playing the scales, and occasionally strains on properly tuned instruments, and will form a continuation of the paper on the "History of Musical Pitch," read by Mr. Ellis before the Society in 1880. It is the result mainly of an examination of native instruments and performers, by which the exact pitch of the notes used was determined by Mr. Ellis and Mr. Hipkins, and will exhibit the scales in use in ancient Greece, in Arabia, India, Java, China, Japan, and other countries. The chair will be taken by Sir Frederick Abel, the Chairman of Council of the Society.

THE Committee of the Saltpetre Producers' Association, on the west coast of South America (Comité Salitrero at Iquique, Chili) offers 1000*l.* in prizes for essays on the use of nitrate of soda as manure. Of this amount (1) a prize of 500*l.* will be awarded for the best popular essay showing the importance of nitrate of soda as a manure, and the best mode of its employment. The essay, in its theoretical part, is to treat of the effect of nitrate of soda on vegetation, as compared with other manures containing nitrogen, and should exhibit the present state of knowledge on this point. In its practical part the essay is to give directions for the use of nitrate of soda in the various conditions of plant-culture. References and quotations, and purely scientific explanations, if necessary, are to appear as notes. The essay may be written in English, German (Italic character), or French. The writing must be distinct, and on one side of the paper only. It is desired that the length of the essay may not exceed six sheets of printed octavo. Each manuscript is to be signed with a motto; the name and address of the author is to be given in a sealed envelope bearing the motto outside. The essays are to be sent on or before October 1, 1885, to any of the undermentioned judges. (2) A prize of 500*l.* will be awarded for the best essay treating of the same subjects on the basis of new experimental researches, made by the author himself. The essays must fulfill the conditions already mentioned. They may be sent to any of the judges on or before January 1, 1887. The Committee of judges consists of the following agricultural chemists:—Germany: Prof. Paul Wagner, Director of the Agricultural Station at Darmstadt. England: Mr. R. Warington, Agricultural Laboratory, Rothamsted, St. Albans, Herts. United States of America: vacant. France: Prof. L. Grandeau, Director of the Agricultural Station, and Dean of the Faculty of Natural Philosophy at Nancy. Belgium: Prof. Petermann, Director of the Royal Agricultural Station at Gembloux. Holland: Prof. Adolf Meyer, Director of the Agricultural Station of the State at Wageningen. Russia: Prof. L. Thoms, Director of the Agricultural Station at the Polytechnical Institution at Riga. If none of the essays received should thoroughly satisfy the committee of judges, they are authorised to award inferior prizes of not less than 150*l.* each. Any essay for which a prize is awarded becomes the absolute property of the Saltpetre Producers' Association at Iquique, which also reserves to itself the right of translation into other languages.

IN his series of lectures on electricity, M. Becquerel *fils* exhibited at the Conservatoire des Arts et Métiers a loud speaking telephone, which was heard without difficulty throughout the amphitheatre. This will be one of the attractions of the forthcoming electrical exhibition at the Observatoire. The halls will be lighted by a new lamp constructed by MM. Breguet and Co.

THE January number of the *Melbourne Review* contains a very interesting article on the climatic vicissitudes of Victoria, by Mr. G. S. Griffiths. Referring to the researches of Baron von Müller, the writer says that that learned botanist has discovered striking testimony to the occurrence of rapid climatic changes in Australia. First he found that during the older Pliocene period the Australian flora was lauraceous—plants of the warmth-loving laurel family predominating. In the newer Pliocene deposits these laurels have been swept away, and are replaced by a meliaceous flora and by plants of a still more tropical character. Once more an active vegetation disappears, and in its stead the myrtle family, with its characteristic eucalypts, overspreads the whole land, and still keeps possession. What great climatic vicissitudes (Mr. Griffiths asks) could rob a region of a whole suit of vegetation and repeat the act twice within a brief period? He thinks this evidence to be strongly corroborative of the occurrence of interglacial periods. There are, however, other facts. The pepper plant (*Drimys antartica*) is a native of the colder regions of the globe. When the Glacial epoch set in and a chilly temperature advanced to the equator itself, this plant marched forward with it in the same regions. When the interglacial warm period came on the cold temperature relaxed; but wherever the pepper plant had access to lofty mountains it retreated to their cold peaks, and so secured itself permanently in its new home. Then it died out on the hot plains, and thus Mr. Griffiths explains its existence upon the lofty ranges of New Guinea and Borneo, but nowhere else until we get far down into the colder regions of the southern hemisphere—its natural habitat. In the same manner cold-loving European plants crossed the hot tropics, unknown ages since, but probably at the same epoch, and established themselves in Australia; and so, when botanists in exploring the Australian mountains climbed to an altitude of 5000 feet, they met thirty-eight species of European plants, isolated from their fellows, and thousands of leagues from their home.

THE Russian Government has ordered from a Paris balloon factory two elongated silk balloons, in order to experiment on their direction by electricity. The Italian Government has also ordered two silk balloons equipped with telephones, &c., for captive ascents.

To the *Astronomische Nachrichten*, Nos. 2651-52, Herr von Gothard contributes an elaborate paper on the periodicity of the changes observed in the spectrum of β Lyræ during the year 1884. The observations of the previous year had already determined changes in the intensity of the bright bands, which could not be accounted for by mere atmospheric influences. Since then thirty fresh observations have enabled the author to follow through successive periods the shiftings of the bands D_3 from an almost brilliant intensity to their total disappearance. He was prevented by the unfavourable atmospheric conditions from determining the duration of the several periods, which however seemed to average not more than seven days. The hydrogen lines and also very probably those of the red, although more constant, also seem subject to periodical change. The spectroscopic phenomenon is of such a remarkable and unique character that observers are urged to direct their attention to this highly interesting star, with a view to a more accurate determination of its periodicity. Appended to the paper is a brief summary of the thirty observations taken at intervals from February 18 to November 17 of last year. Of these the following may be quoted as bearing on the short duration of the periodic changes:—July 13, D_3 of almost dazzling brightness; July 17, D_3 very faint; September 17, D_3 scarcely perceptible; September 24, D_3 again brilliant; November 1, D_3 invisible; November 5, D_3 bright.

AN important point in connection with recent seismic investigation in Japan which does not yet appear to have been noticed in this country, is the various intensities of the same shock and of different shocks at different places. One place appears more subject to earthquakes than another place which may be near at hand, and to be more violently affected than the latter by an earthquake which visits both. Thus, with similar instruments placed at the corners of a triangle having sides about 800 feet long, Prof. Milne has obtained conclusive evidence that, while at one corner there might be sufficient motion to shatter a building, at the other corners the disturbance would be trivial. In the last severe shock by which the capital of Japan was visited, the chimneys of the British Legation were shaken so severely that they had to be rebuilt, but the Russian Legation, a building of much the same character a mile away, suffered no appreciable damage. If in further investigation it turns out that certain portions of the same earthquake district are comparatively free from violent shocks, while the force of the earthquakes are concentrated in certain others, then seismic surveys would appear an indispensable pre-requisite of building in earthquake countries. A residence in "a desirable situation" would in that case mean, not one commanding a good view, or close to the station, church, and post-office, or convenient for a pack of hounds, but one built on an oasis unsympathetic to earthquakes, and which remains still and secure while its neighbours are being tossed about and destroyed by seismic forces.

THE Sixth Circular of Information of the United States Bureau of Education for 1884, compiled by Miss Annie T. Smith, a Member of the Office, is a digest of the information gained there on the subject of rural schools. It is hardly necessary to refer here to the difficulty of a thinly populated country like America—viz. the smallness of the schools, and hence, in defiance of State laws, the smallness of teachers' pay and teachers' qualifications. High authorities are here cited as to the ease with which much valuable information might be imparted to many such teachers who sorely need it. Good technical rules accordingly for teachers in any country, and a list of about eighty books bearing upon education and desirable for a schoolmaster's library are here given. The Circular records the eager desire for new ideas on the subject of elementary instruction manifest in all countries; and after quoting the highest English and American authorities on the subject, it gives a *résumé* of some recent publications of the Belgian and French Governments. The principal result of it all is to insist upon the great value of general object-lessons; for which purpose, moreover, French schools are cited as being provided with specimens of the materials used in the trades of the neighbourhood: to urge the teaching of geography first from the nearest surrounding view, and *then* from the map which has thus been made intelligible; of elementary arithmetic also by objects. The way in which, in agricultural districts, this object-learning goes on side by side with book-learning, especially in the cases of the youngest boys whose time is divided between school and labour, makes it a familiar phrase in America that "our brightest boys come from the country."

IN the report of the Temple Observatory at Rugby for 1884, Mr. Seabroke, the Honorary Curator, reports that the original work done during the past year consisted of the measurement of positions and distances of double stars, in continuation of that of former years. 264 complete measures of 108 stars were taken. The observations of double stars of the last four years have, it is stated, been presented to the Royal Astronomical Society, and ordered to be printed in the *Memoirs*. They number about 900 complete measures. A new list of stars for measurement in coming years has been prepared by Mr. Seabroke, with the assistance of Mr. C. H. Hodges. Some few measurements have also been made of the motion of stars in the line of sight with the spectroscope on the reflector.

THE decreasing tendency of the lobster fishery in America is becoming so marked that the United States Fisheries Commission is instituting inquiries into the causes operating against it. It is intended to investigate all points connected with the natural history of the species, the condition of the fishery grounds, &c., in order to arrive at a satisfactory conclusion on the subject.

THE Council of the National Fish Culture Association have decided to form an ichthyological library containing works of every description on the subject of our fish and fisheries, their culture and development.

WE have received separate reprints of the following papers read before the Chemical Society:—"On Additive and Condensation Compounds of Diketones with Ketones," by Messrs. Japp and Miller, and "On Condensation of Benzil with Ethyl Alcohol," by Dr. Japp and Miss Mary E. Owens.

WE have received from Messrs. Lancaster and Son, of Birmingham, a catalogue of photographic apparatus for dry-plate photography, and a useful illustrated pamphlet, "How to be a Successful Amateur Photographer," by W. J. Lancaster, F.C.S.

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus* ♀) from India, presented by Mrs. Thomas; a Grey Ichneumon (*Herpestes griseus*) from India, a Vulpine Phalanger (*Phalangista vulpina* ♂) from Australia, presented by Mr. J. G. Baxter; a Plantain Squirrel (*Sciurus plantani*) from India, presented by Lieut. A. H. Oliver, R.N.; a Barn Owl (*Strix flammea*), British, presented by Mr. W. P. Clark; a Red-billed Whistling Duck (*Dendrocygna autumnalis*) from South America, presented by Mr. Wm. Boutcher; an Indian Crocodile (*Crocodilus palustris*) from India, presented by Mr. John Murphy; a Common Boa (*Boa constrictor*) from South America, presented by Mr. Allen; an Algerian Tortoise (*Testudo mauritanica*) from North Africa, deposited; a Red-eared Monkey (*Cercopithecus erythrotis* ♂), a Pluto Monkey (*Cercopithecus pluto* ♀), a White-thighed Colobus (*Colobus vellerosus* ♂) from West Africa, a Hairy-nosed Wombat (*Phascolomys latifrons* ♀), a Blood-stained Cockatoo (*Cacatua sanguinea*) from South Australia, purchased; three Long-fronted Gerbilles (*Gerbillus longifrons*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

TEMPEL'S COMET (1867 II.).—M. Raoul Gautier has circulated an ephemeris of this comet, intending to communicate the details of his calculation of the effect of the perturbations of Jupiter during the comet's long continuance in the neighbourhood of the planet in the last revolution to the *Astronomische Nachrichten*. The ensuing perihelion passage is retarded thereby rather more than 148 days: the major-axis of the orbit is considerably increased and the eccentricity diminished. As a consequence the perihelion distance receives a very important augmentation. This result, which could not have been foreseen without at least an approximate determination of the perturbations occasioned by the attraction of Jupiter, materially diminishes the chances of observing the comet during the present year, and indeed in future years, so long as the elements do not undergo considerable change. M. Gautier finds that the perihelion passage is delayed until September 25, but that the nearest approach of the comet to the earth occurs on March 31, when its distance is 1·51. The maximum theoretical intensity of light which is attained on April 10 is only 0·074 (if expressed in the usual manner); for comparison with this value, it may be remarked that on August 21, when Schmidt last observed the comet for position in that year, perceiving it, as he says, only "blickweise," the intensity of light was 0·21, and at M. Tempel's last observation at Florence on July 8, 1879, it was 0·33. It will therefore be obvious that the observation of the comet in the present year is at least doubtful, but an extract from M. Gautier's ephemeris, applying to the next period of absence of moonlight, is subjoined:—

At Berlin Midnight

	R.A.				Decl.			Log. distance from		
	h.	m.	s.		°	′		Earth		Sun
April 2 ...	11	55	17	...	+18	56·3	...	0·1792	...	0·3877
4 ...	11	53	44	...	18	58·2				
6 ...	11	52	14	...	18	59·1	...	0·1803	...	0·3851
8 ...	11	50	47	...	18	58·9				
10 ...	11	49	24	...	18	57·7	...	0·1824	...	0·3826
12 ...	11	48	5	...	18	55·3				
14 ...	11	46	52	...	18	51·8	...	0·1855	...	0·3801
16 ...	11	45	43	...	18	47·2				
18 ...	11	44	40	...	+18	41·6	...	0·1894	...	0·3776

The elements of the orbit are as follows (M. Eq. 1885·0):—

Perihelion passage, 1885, September 25·7649 M.T. at Berlin.

	°	′	″
Longitude of perihelion	241	26	1·0
,, ascending node	72	28	7·7
Inclination	10	50	27·2
Angle of excentricity	23	53	57·0
Log. semi-axis major			0·542244
Mean daily sidereal motion			545″·3073

The perihelion distance in 1867, in which year the comet was first detected by M. Tempel, was 1·564, the earth's mean distance from the sun being taken as unity: the above elements show that at perihelion passage in 1885, this distance will have been increased by perturbation to 2·073. The nearest approach of the comet to the earth's orbit occurs at or very close to perihelion, and it will appear that under the most favourable conditions, with the orbit of 1885, the theoretical intensity of light cannot exceed one-sixth of the value which it might have attained in the orbit of 1867. At aphelion in the new orbit the comet approaches that of Jupiter within 0·17.

THE VARIABLE STAR MIRA CETI.—Mr. Knott, who has had this star under close observation at Cuckfield since January 7, has ascertained that a maximum of 2·9 m. occurred on February 11, which is fourteen days later than given by the formula of sines in Prof. Schönfeld's second catalogue. The next minimum may be expected to fall about the middle of September, and the following maximum in the first days of January, 1886, assuming that there is a similar retardation on the date assigned by the formula.

ASTRONOMICAL PHENOMENA FOR THE WEEK, 1885, *MARCH* 22–28

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on March 22

Sun rises, 6h. 0m.; souths, 12h. 6m. 53·8s.; sets, 18h. 15m.; decl. on meridian, 0° 49′ N.: Sidereal Time at Sunset, 6h. 16m.

Moon (at First Quarter on March 23) rises, 9h. 22m.; souths, 17h. 12m.; sets, 1h. 5m.*; decl. on meridian, 17° 55′ N.

Planet	Rises			Souths			Sets			Decl. on meridian		
	h.	m.		h.	m.		h.	m.		°	′	
Mercury ...	6	15	...	12	40	...	19	4	...	4	5	N.
Venus ...	5	50	...	11	28	..	17	6	...	4	57	S.
Mars ...	5	51	...	11	38	...	17	25	...	3	23	S.
Jupiter ...	14	42	...	21	57	...	5	12*	...	13	38	N.
Saturn ...	9	3	...	17	8	...	1	13*	...	21	47	N.

* Indicates that the setting is that of the following day.

Occultations of Stars by the Moon

March		Star		Mag.		Disap.			Reap.			Corresponding angles from vertex to right for inverted image	
						h.	m.		h.	m.		°	°
22	...	111 Tauri	...	5½	...	18	52	..	19	54	...	84	334
22	...	117 Tauri	...	6	...	21	2	...	21	23	...	56	19
24	...	68 Geminorum..		5½	...	23	39	...	0	37†	...	122	294
26	...	B.A.C. 2872	...	6	...	0	41	...	1	38	...	113	295
27	...	*h* Leonis ...	...	6	...	1	45	...	2	36	...	82	319
27	...	B.A.C. 3529	...	6	...	22	24	...	23	23	...	37	303
27	...	43 Leonis	...	6	...	23	37	...	0	28†	...	131	233
28	...	B.A.C. 3836	...	6	...	22	19	...	23	19	...	24	290

† Occurs on the following day.

Phenomena of Jupiter's Satellites

March		h.	m.		March		h.	m.	
22	...	3	39	II. occ. disap.	25	...	4	11	IV. ecl. disap.
		20	17	I. tr. egr.			21	16	II. ecl. reap.
23	...	21	46	II. tr. ing.	27	...	3	58	I. occ. disap.
24	...	0	41	II. tr. egr.	28	...	1	18	I. tr. ing.
		18	43	III. ecl. reap.			1	50	III. tr. ing.
		20	49	IV. occ. disap.			3	37	I. tr. egr.
25	...	1	29	IV. occ. reap.			22	25	I. occ. disap.

The Occultations of Stars and Phenomena of Jupiter's Satellites are such as are visible at Greenwich.

March		h.		
22	...	16	...	Saturn in conjunction with and 3° 56′ north of the Moon.